Appendix I

Recommendations for Surface Water System
Source Water Area Delineations

Recommendations for Surface Water System Source Water Area Delineations

Surface Water Delineation Technical Advisory Committee

A technical advisory committee met on July 9, 1997 and August 18, 1997 to discuss the delineation of source water protection areas for Wisconsin surface water treatment plants. Committee members represented various interests and had expertise in hydrodynamics, contaminant transport, and other areas. As a result of committee member participation, several recommendations were voiced that can be used to guide the delineation of source water protection areas.

COMMITTEE MEMBERS

Dale Robertson - United States Geological Survey-Madison
Kwang Lee - University of Wisconsin-Milwaukee
Gary Swanson - CH2M Hill-Milwaukee
John Panuska - Department of Natural Resources-Madison
Steve Jaeger - Department of Natural Resources-Madison
Roger Bannerman - Department of Natural Resources-Madison
Jim Baumann - Department of Natural Resources-Madison
Jill Jonas -Department of Natural Resources-Madison
Pete Wood - Department of Natural Resources-Milwaukee

RECOMMENDATIONS

1. For intakes located in Lake Michigan and Lake Superior, delineate and assign subwatersheds to each intake/intake cluster as source water protection areas. Subwatersheds should be assigned based on proximity to intakes, potential to impact intakes, and local jurisdictions.

2. For intakes located in Lake Winnebago, delineate and assign the entire watershed to all intakes as the source water protection area.

3. Geographic Information System (GIS) technology should be used to create maps for the public that include delineated source water protection areas and sources of contamination located within those areas.

4. Within delineated source water protection areas, further subdivision and/or designation of critical areas is encouraged. Individual watersheds within source water protection areas can be designated for different levels of assessment based on size and proximity to intakes. Critical areas within source water protection areas can be designated based on land use and/or contaminant occurrence.

5. To facilitate critical area designation, more raw water monitoring data from surface water treatment plant intakes is needed for identification of significant contaminants and/or contaminant sources.

6. Communicate and cooperate with other States regarding source water protection areas that cross State boundaries (ex., Marinette, Superior).

7. Consult local experts and representatives before finalizing source water protection area delineations.

DISCUSSION

The recommended delineation approach for Great Lakes intakes is intended to concentrate assessment efforts in subwatersheds with significant impact potential and promote local source water protection actions.

Due to intake density, the Lake Michigan protection areas will likely be consecutive (i.e., common boundaries). As a result, individual intakes/intake clusters could experience some impact from adjacent protection areas.

The Department will encourage surface water systems to conduct raw water monitoring in 1998.

The Department is working to arrange an interstate meeting in early 1998 .

The impact of groundwater on surface water was not discussed by the committee but will be considered.

FIGURES

Several figures are included to allow visualization of committee recommendations. These figures represent preliminary delineation efforts and should not be considered finalized source water protection areas.

Figures 1 through 8 represent possible source water protection area delineations for Lake Michigan and Lake Superior systems. Areas were assigned based on the location of river discharges in relation to intakes. Established watershed boundaries were generally used with some modification.

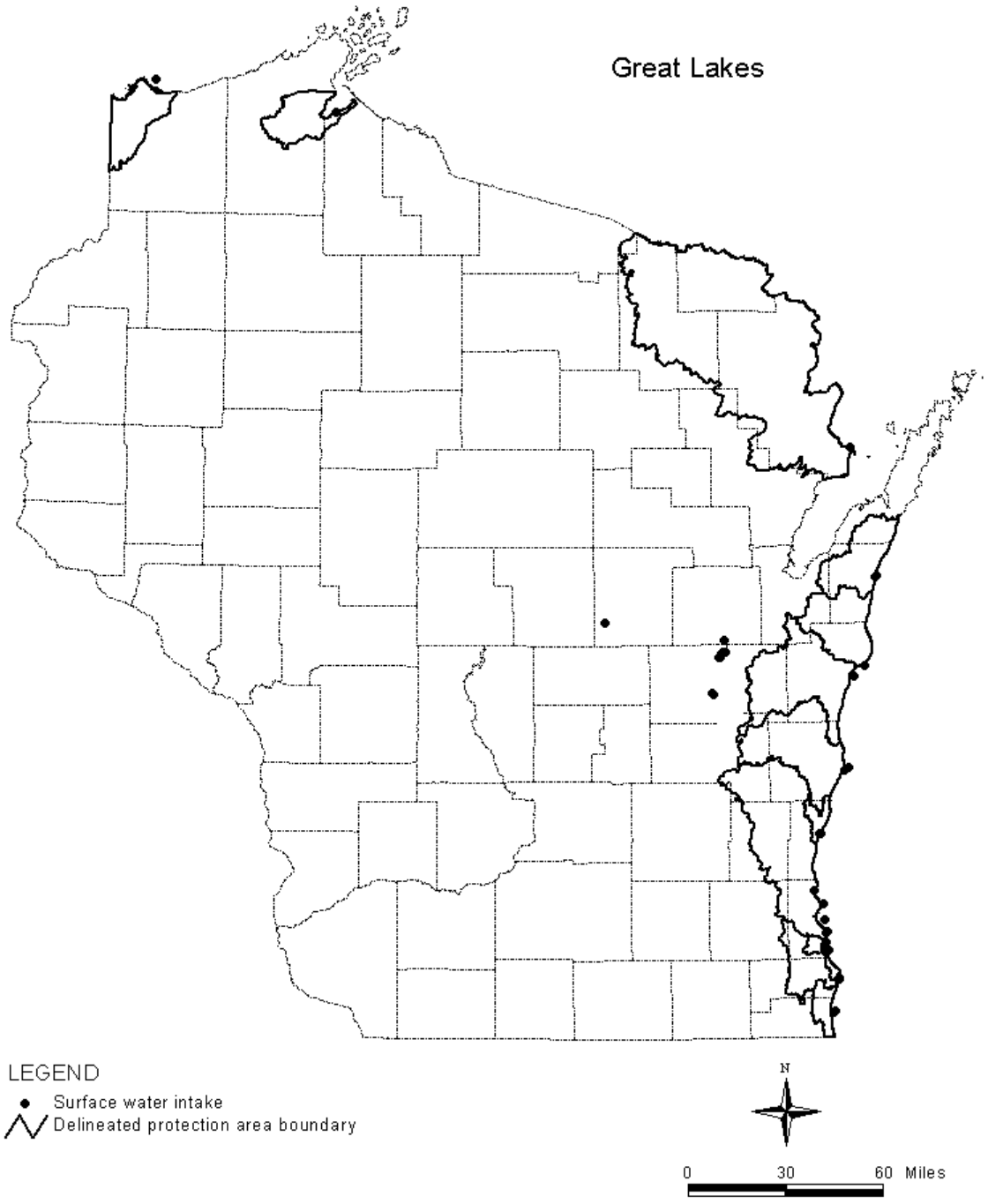
Great Lakes
LEGEND
Surface water intake
Delineated protection area boundary
N
0
30
60 Miles

Figure 1

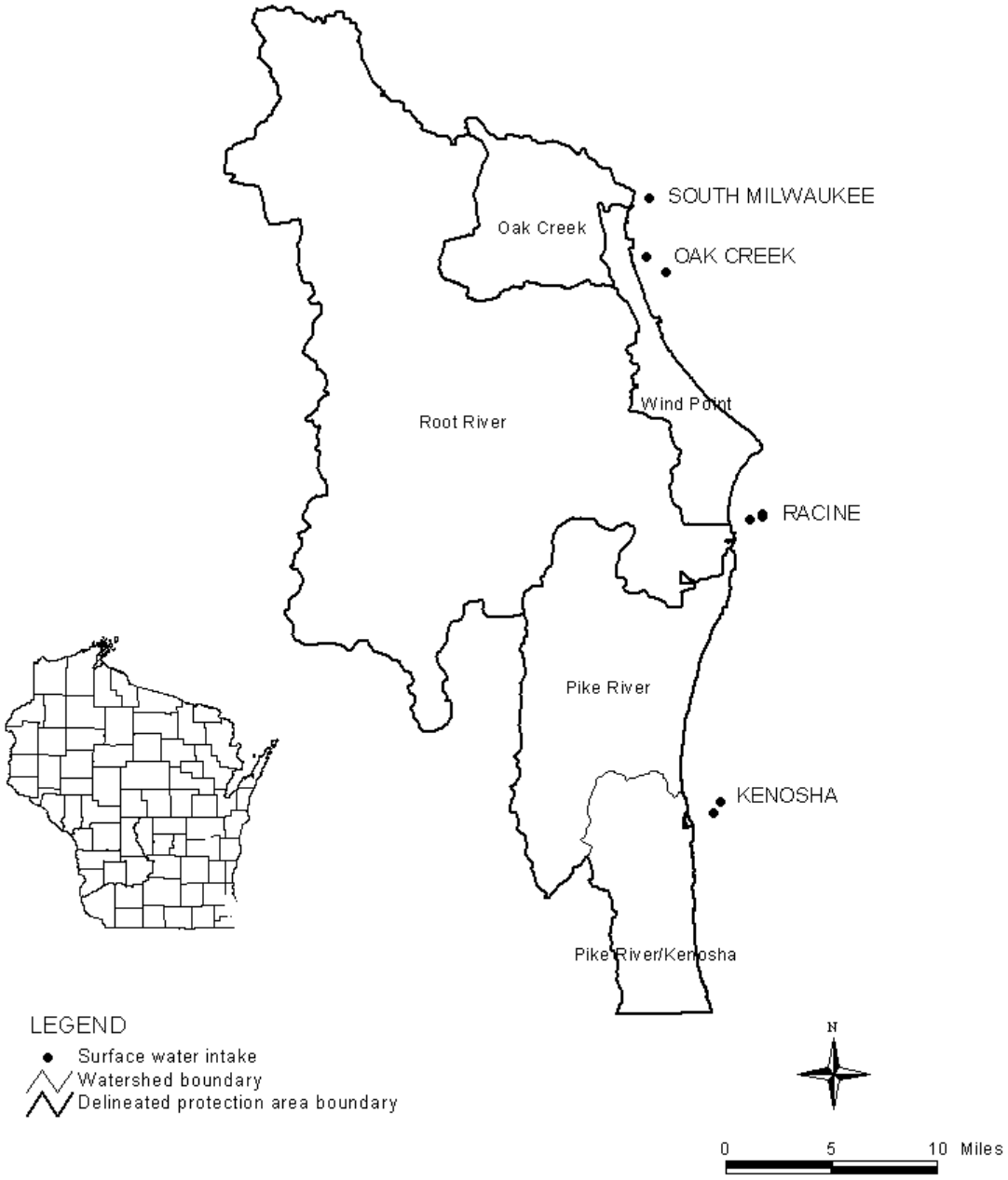
SOUTH MILWAUKEE
Oak Creek
OAK CREEK
Wind Point
Root River
RACINE
Pike River
KENOSHA
Pike River/Kenosha
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 2

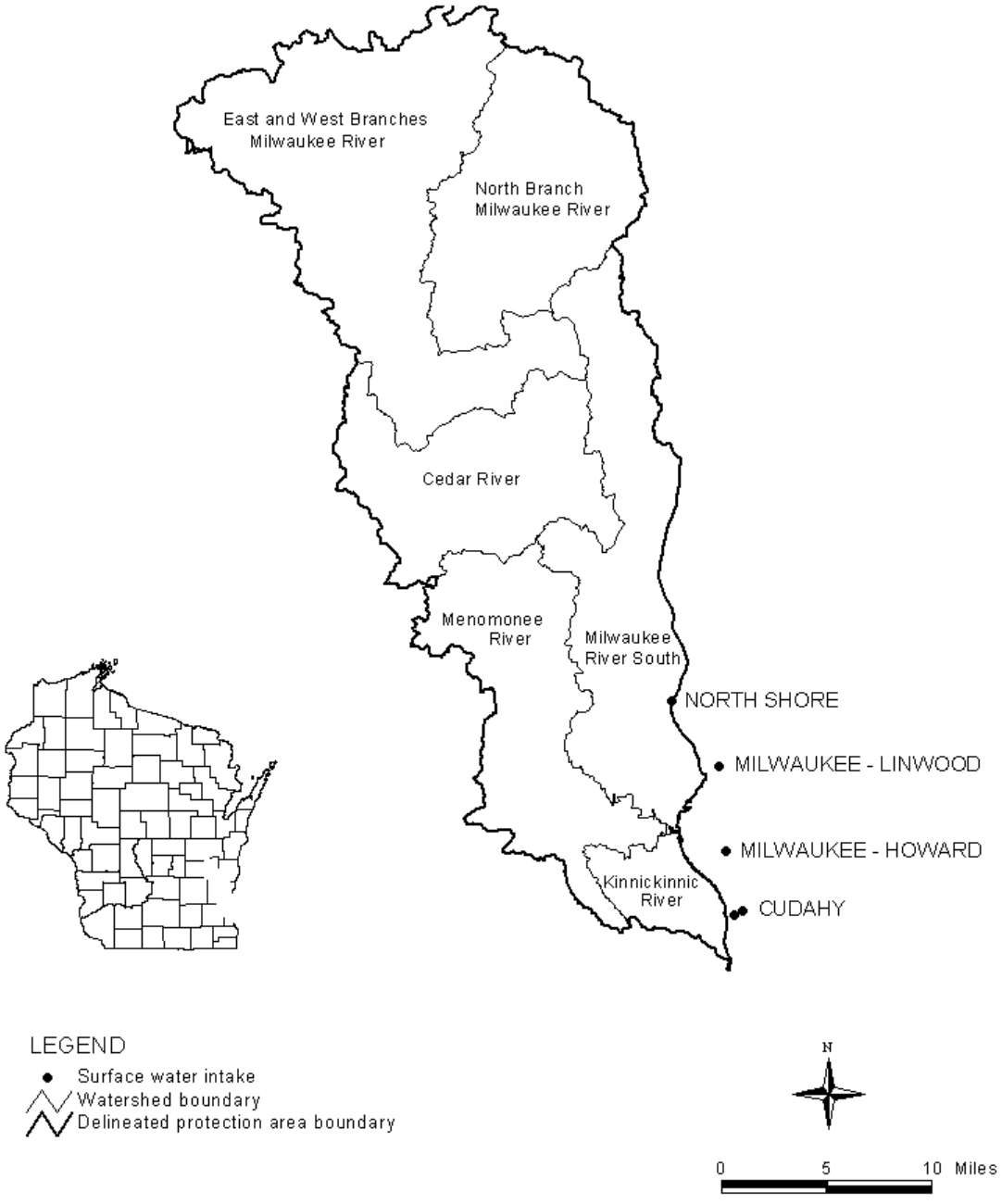
East and West Branches
Milwaukee River
North Branch
Milwaukee River
Cedar River
Menomonee
River
Milwaukee
River South
NORTH SHORE
MILWAUKEE - LINWOOD
MILWAUKEE - HOWARD
Kinnickinnic
River
CUDAHY
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 3

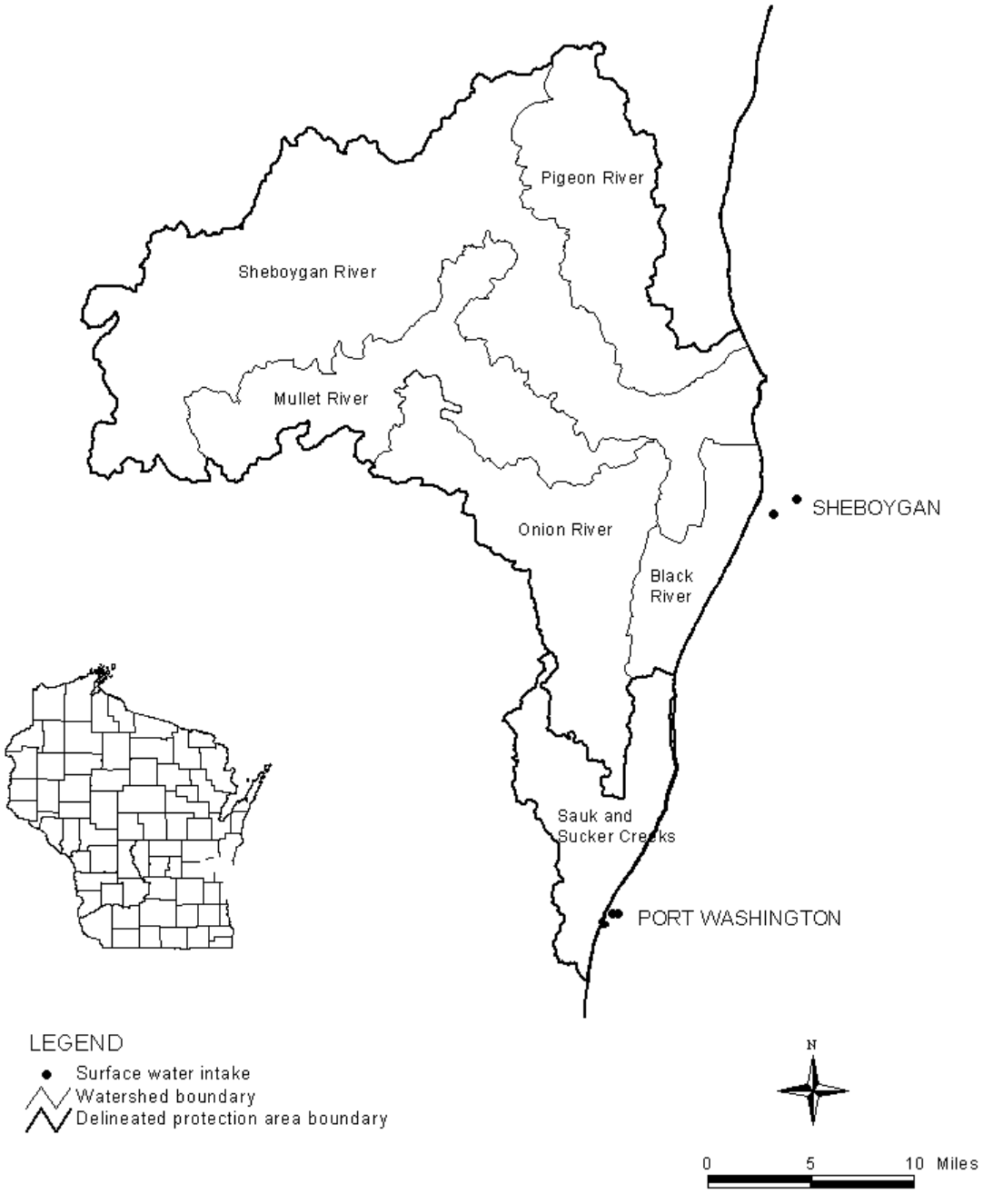
Pigeon River
Sheboygan River
Mullet River
Onion River
Black River
SHEBOYGAN
Sauk and Sucker Creeks
PORT WASHINGTON
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 4

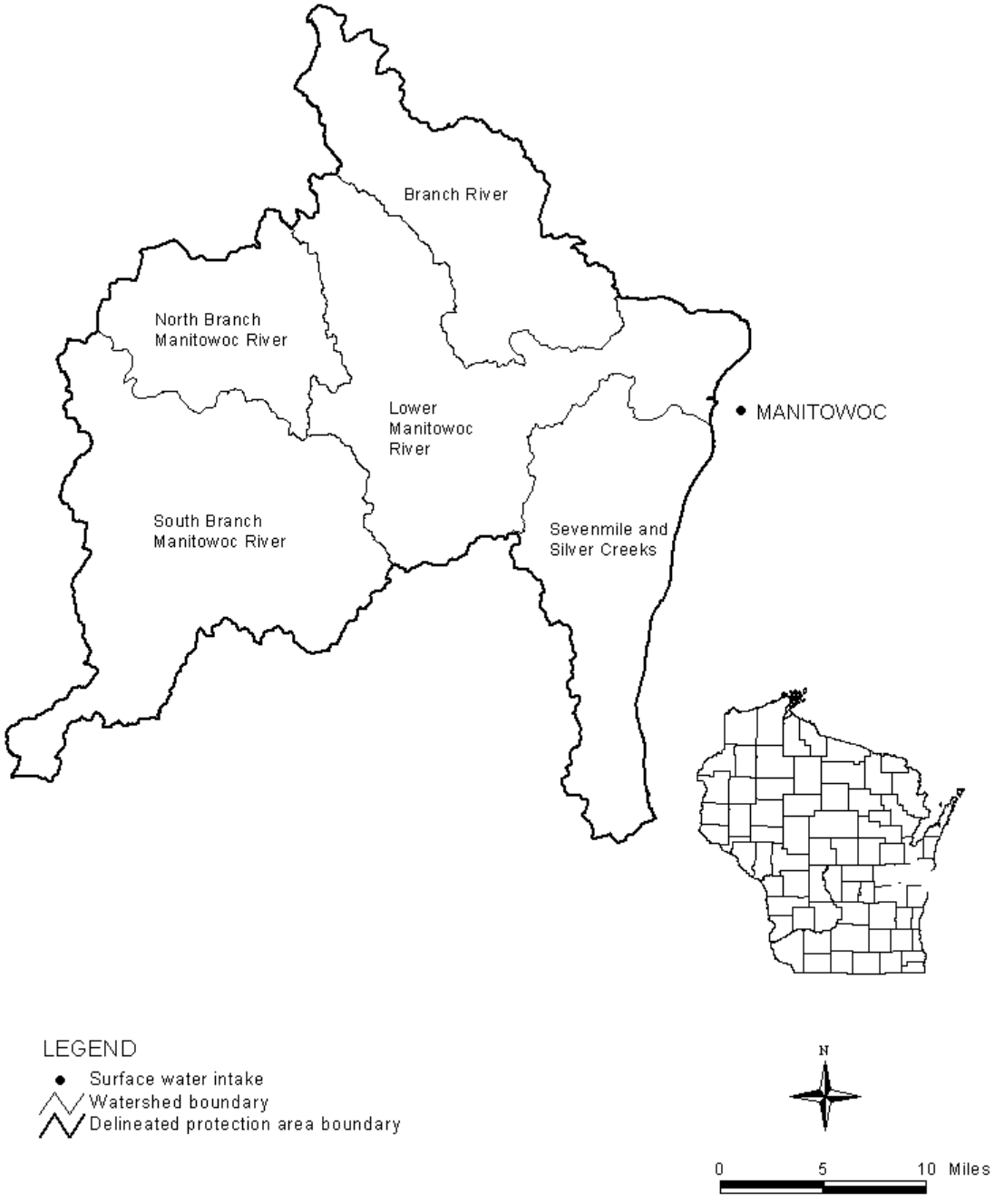
Branch River
North Branch
Manitowoc River
Lower
Manitowoc
River
MANITOWOC
South Branch
Manitowoc River
Sevenmile and
Silver Creeks
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 5

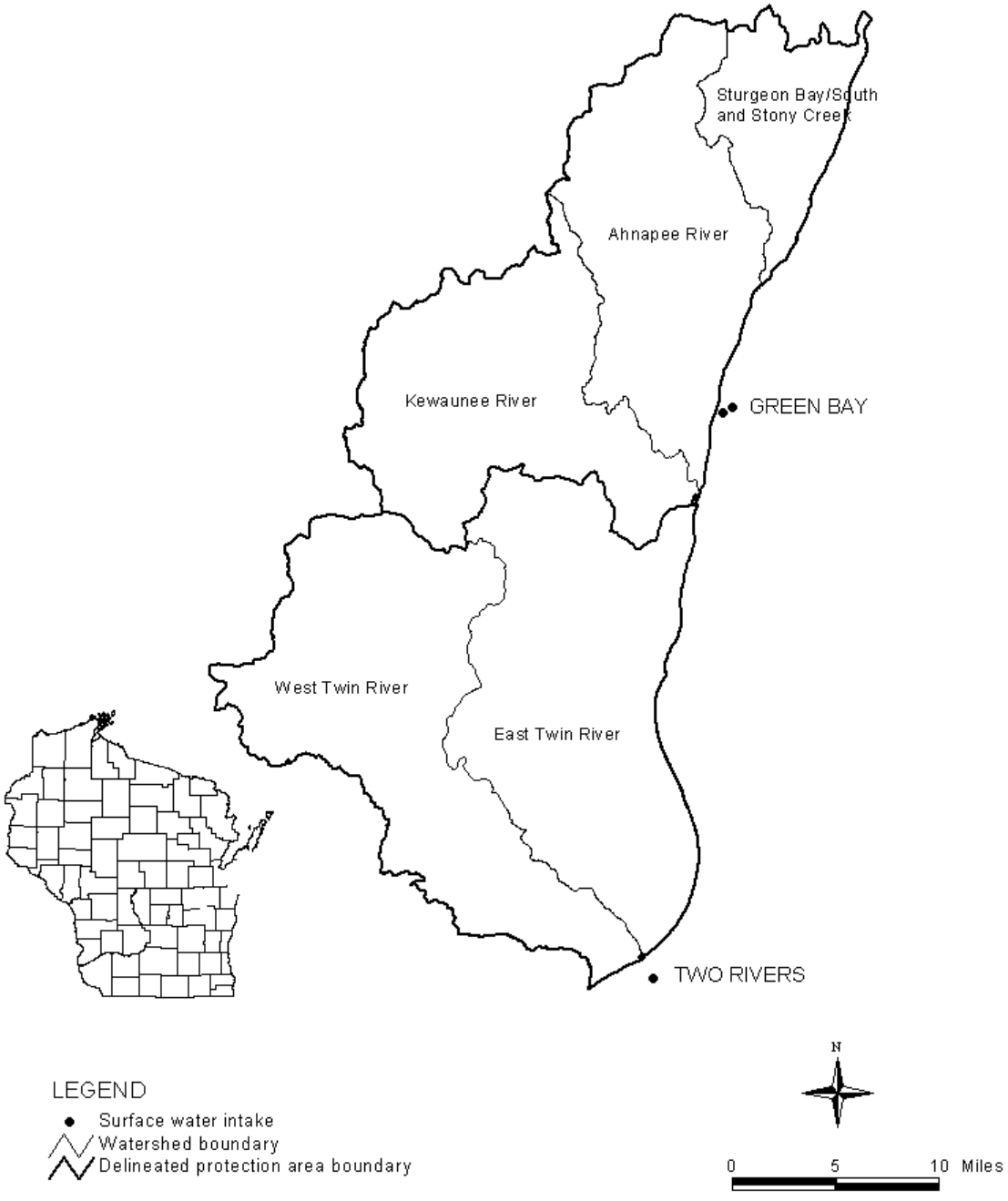
Sturgeon Bay/South
and Stony Creek
Ahnapee River
Kewaunee River
GREEN BAY
West Twin River
East Twin River
TWO RIVERS
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 6


Brule River
Pine River
Popple River
Pemebonwon and
Middle Menominee Rivers
Upper Peshtigo River
Pike River
Otter Creek and
Rat River
Wausaukee and
Lower Menominee Rivers
Middle Peshtigo and
Thunder Rivers
Middle Inlet and
Lake Noquebay
MARINETTE
Little Peshtigo River
Lower Peshtigo
River
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 7

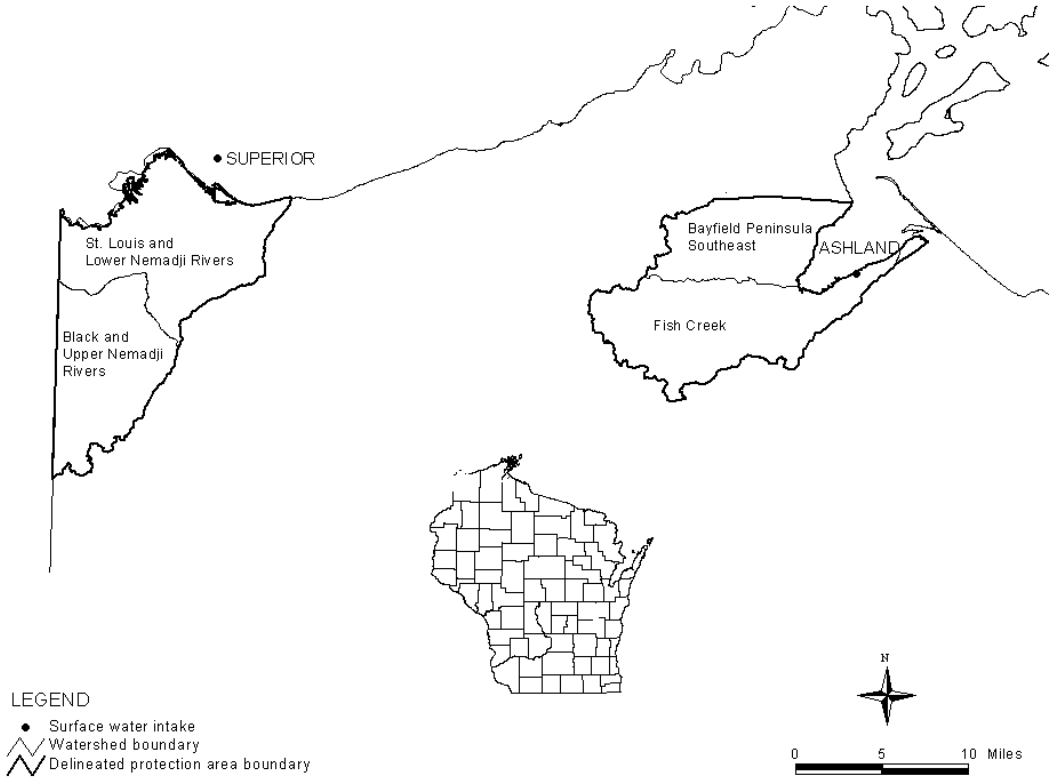
SUPERIOR
St. Louis and
Lower Nemadji Rivers
Black and
Upper Nemadji
Rivers
Bayfield Peninsula
Southeast
ASHLAND
Fish Creek
LEGEND
Surface water intake
Watershed boundary
Delineated protection area boundary
N
0
5
10 Miles

Figure 8

Figure 9 represents a delineation of the entire Lake Winnebago watershed.

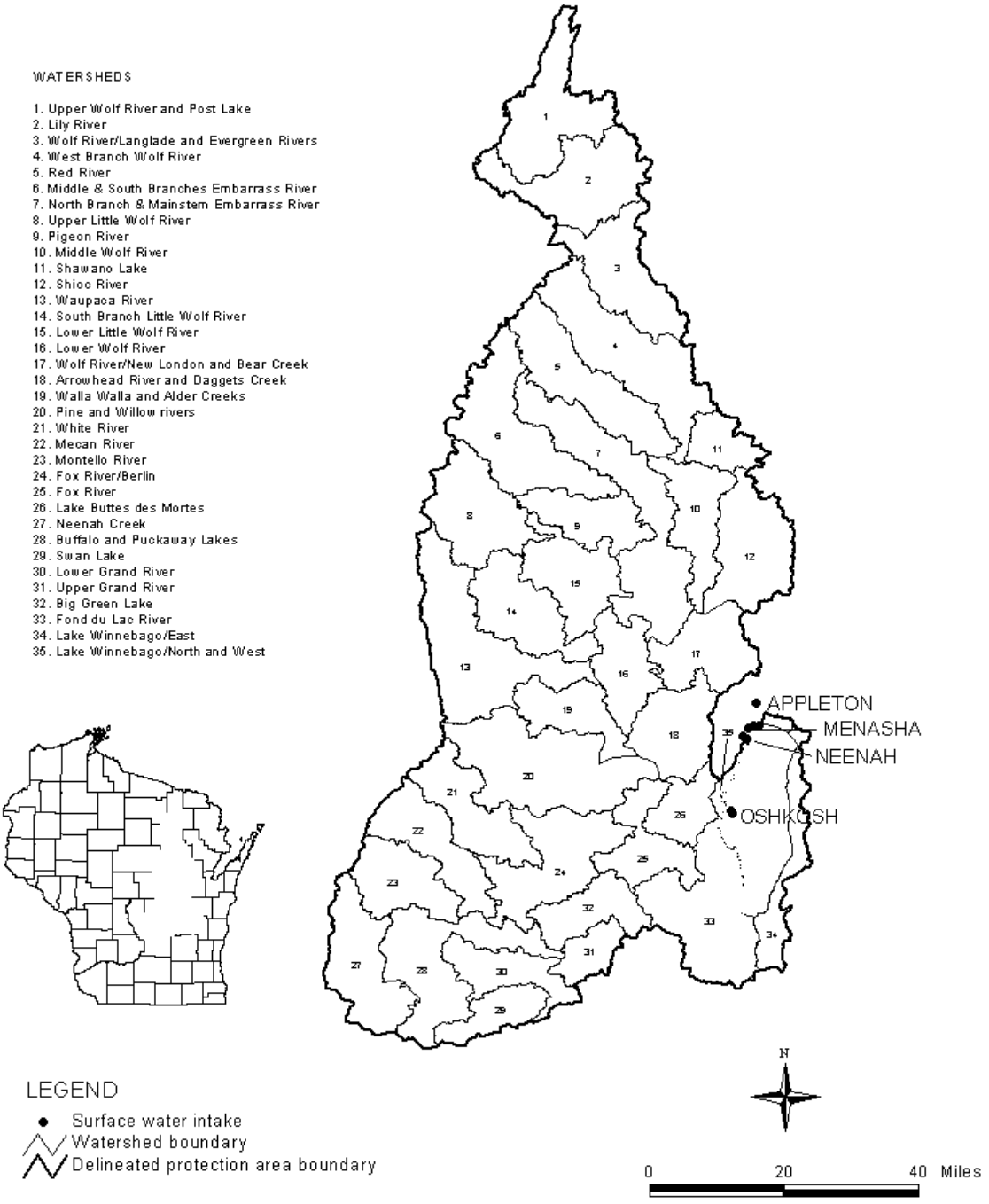

Figure 9

Figure 10 provides an indication of what subdivision and critical area designation within a source water protection area could look like.

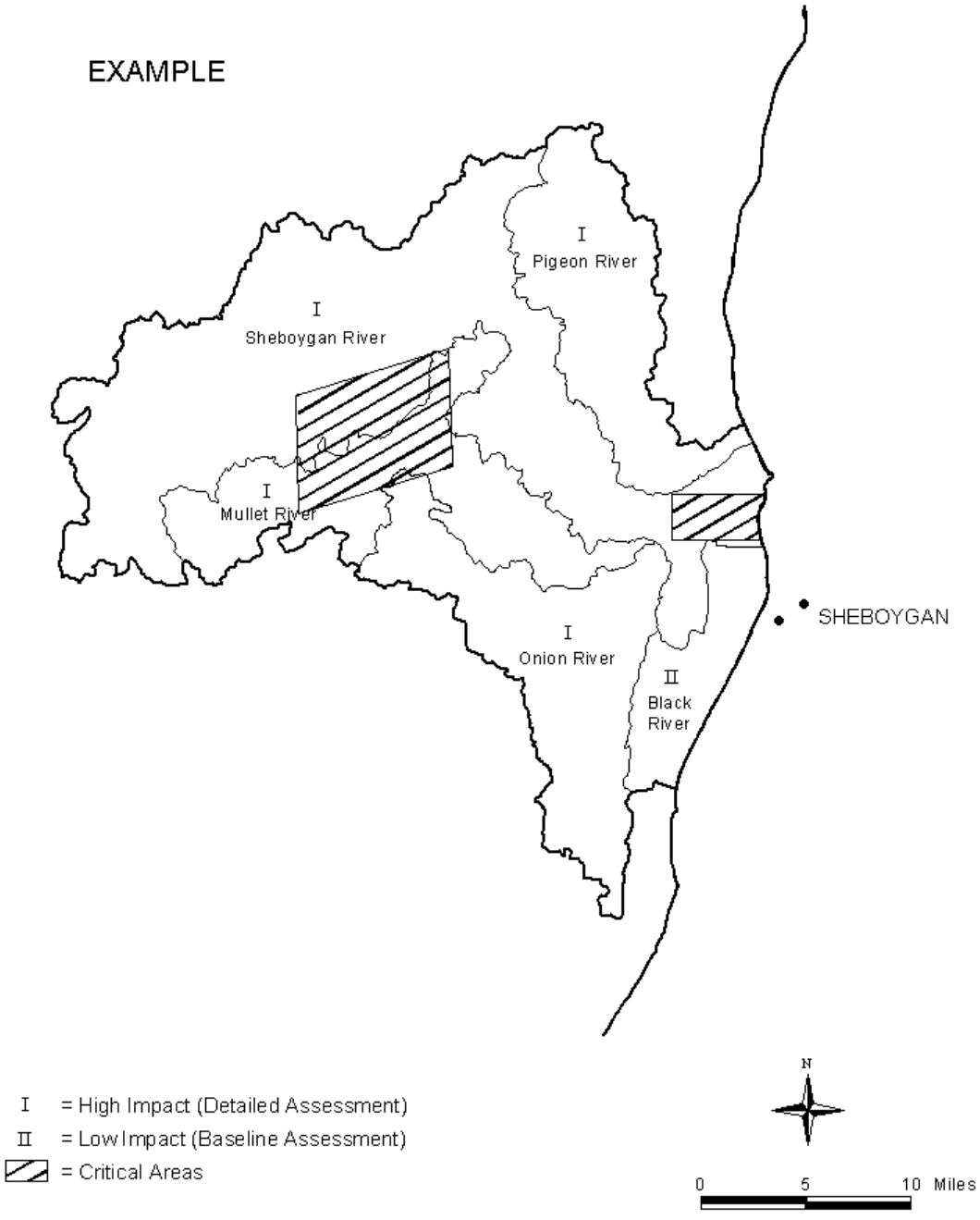
EXAMPLE
I
Pigeon River
I
Sheboygan River
I
Mullet River
SHEBOYGAN
I
Onion River
II
Black
River
I = High Impact (Detailed Assessment)
II = Low Impact (Baseline Assessment)
= Critical Areas
N
0
5
10 Miles

Figure 10